Joint Capability Technology Demonstration
(JCTD)

Orion Unmanned Aircraft System JCTD

Operational Manager: USCENTCOM
Technical Manager: AFRL
Transition Manager: 303rd AESW (P)

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Background

- **Program originated under Congressional sponsorship**
  - Orion HALE program initiated through Army SMDC
  - Air Force Research Lab ULE program won in July 2007
- **Orion MALE UAV shaped in response to DDR&E in Oct 2007**
  - Goal of 5 day endurance, 500 lb payload, 15K altitude
- **Orion satisfies Joint Persistent Surveillance requirement**
  - Strong support from OSD AT&L and AS&C
  - Building support from USAF: AFRL, ASC, ACC, SAF/AQ, Air Staff
- **OSD AS&C proposed Orion JCTD for FY10**
  - USCENTCOM as operational sponsor
  - AFRL as technical manager
  - 303rd AESW (Wright-Pat) as transitional manager-proposed
- **Orion JCTD well supported by COCOMs**

Game-Changing Capability

- How will *Orion* change the game?
  - **5-days with 1,000 lb at 15,000 ft**
  - NFOV FMV EO/IR sensor
  - Comms relay (including laser comms)
- Benefits of the *Orion* UAS:
  - Payload flexibility with **open architecture** interfaces
  - Highly autonomous operations
  - Standards compliant GCS
  - Reduced O&M manpower when compared to currently fielded systems
  - Twin certified heavy fuel engines
  - Redundant avionics systems

JCTD Goal: Prove the Concept!

Recent Orion Activity

- Technical achievements:
  - Preliminary Design Review Nov 08
  - Design Limit Load wing test Nov 08
  - Engine certification (EASA) Jan 09
  - Engine acceptance testing Feb 09
  - Auto takeoff and land (ATOL) testing Mar/Apr 09
- Programmatic update:
  - ULE final report delivered to AFRL Feb 09
  - Orion JCTD presented to CRB Mar 09
  - JROC validated May 27, 2009

Auto-land of Surrogate

Wing in Design Limit Load test

Acceptance of Austro engine

Orion System Benefits

Affordable unit cost, long-loiter endurance

Significant dependence on COTS, health monitoring, reliability

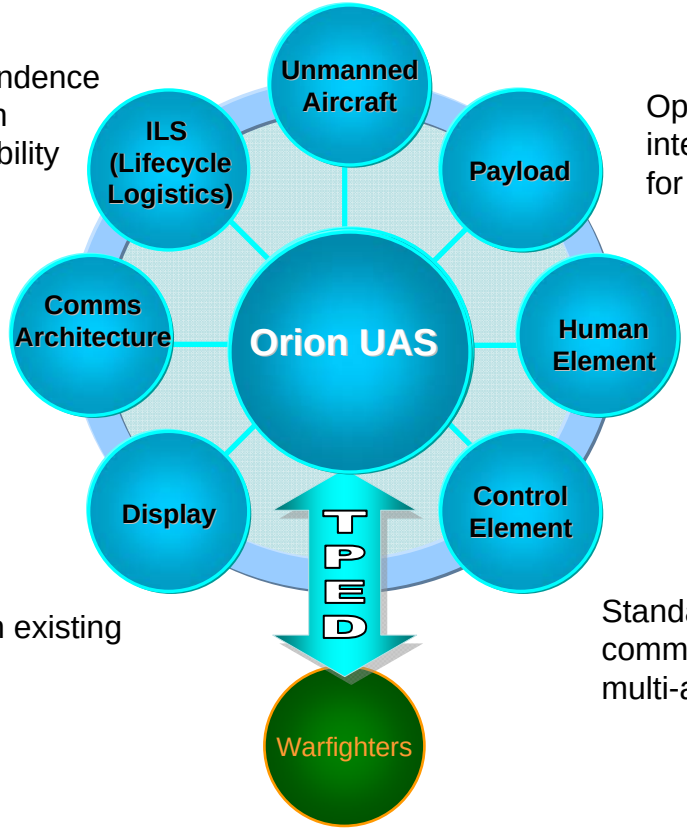
Open architecture interface, SWAP, allow for payload flexibility

Leverage existing DCGS, utilize TCDL, SATCOM

Autonomous capability reduces operator workload, minimizes errors

Commonality with existing UAS platform

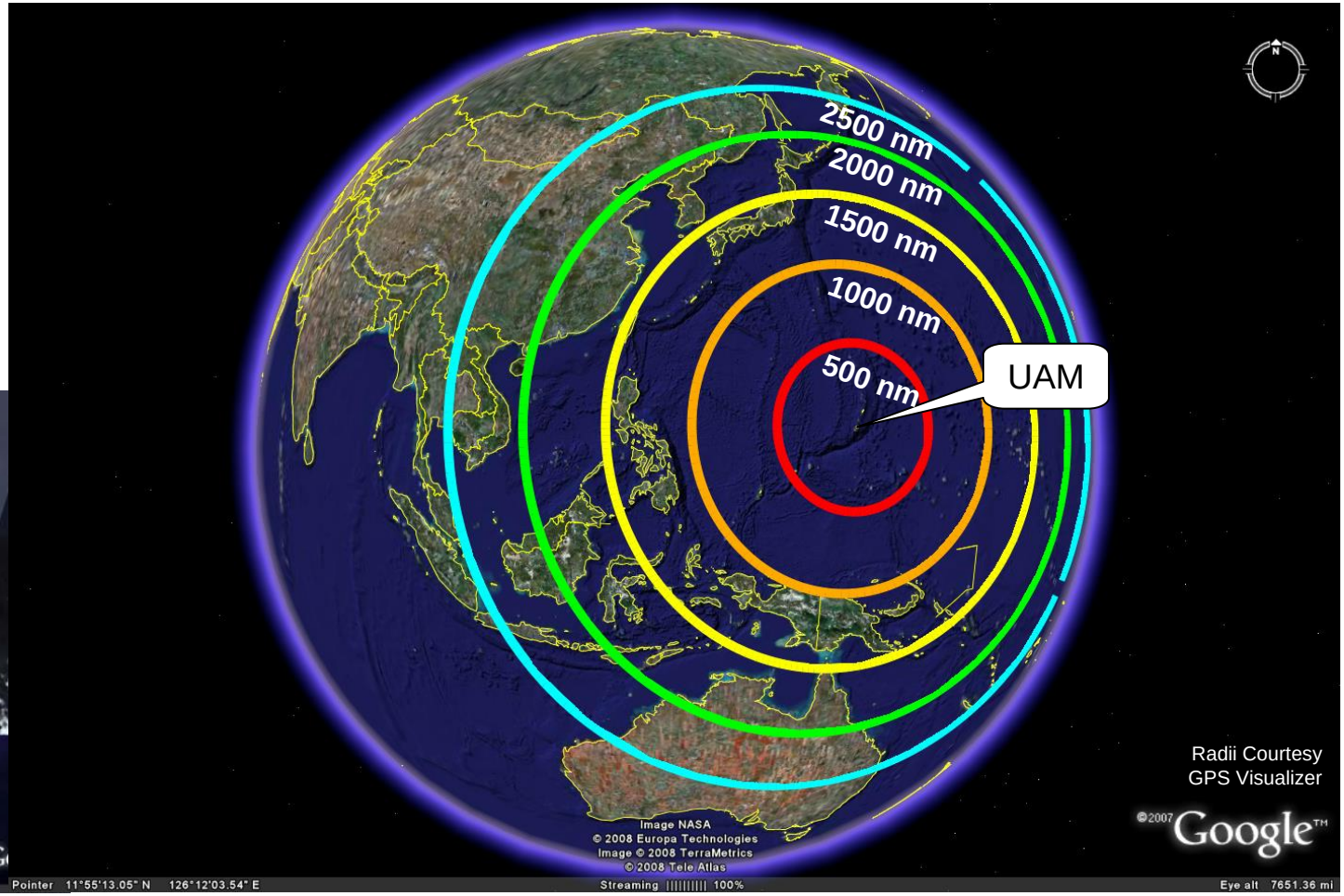
Standards compliant comms link supports multi-aircraft control



Loiter Time at Range

- **Takeoff and land at Andersen AFB, Guam (UAM)**

Range	Loiter Time @ 20,000 ft
500 nm	**110 hr**
1000 nm	**98 hr**
1500 nm	**84 hr**
2000 nm	**70 hr**
2500 nm	**54 hr**

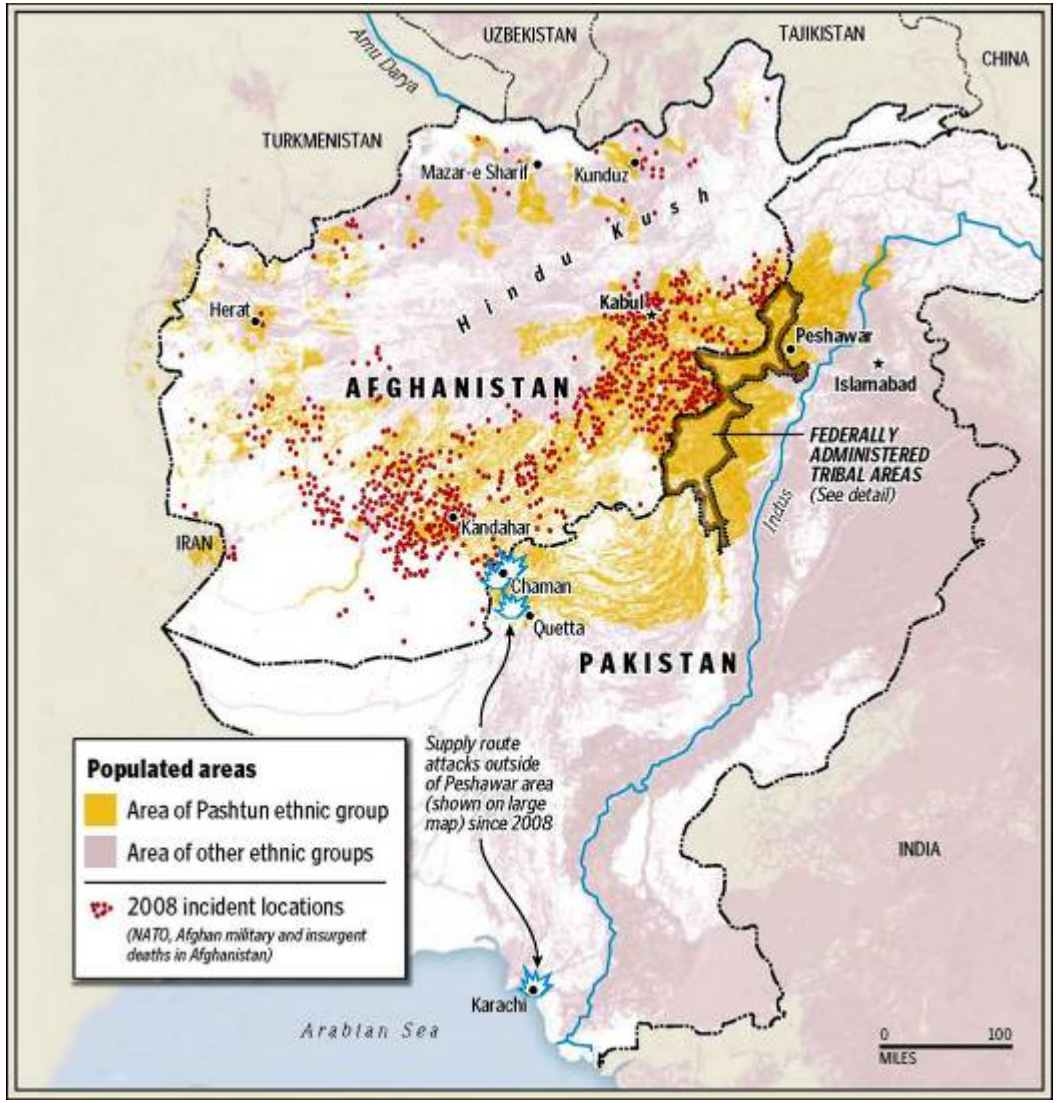


Orion Available for Afghan Ops

With Orion's 30,000 ft service ceiling:

- Orion at 5,000 ft AGL covers 100%
- Orion at 15,000 ft AGL covers 70%
  - Majority of hot-spots

Purpose built for WAAS, comms relay or supporting "patterns of life" staring



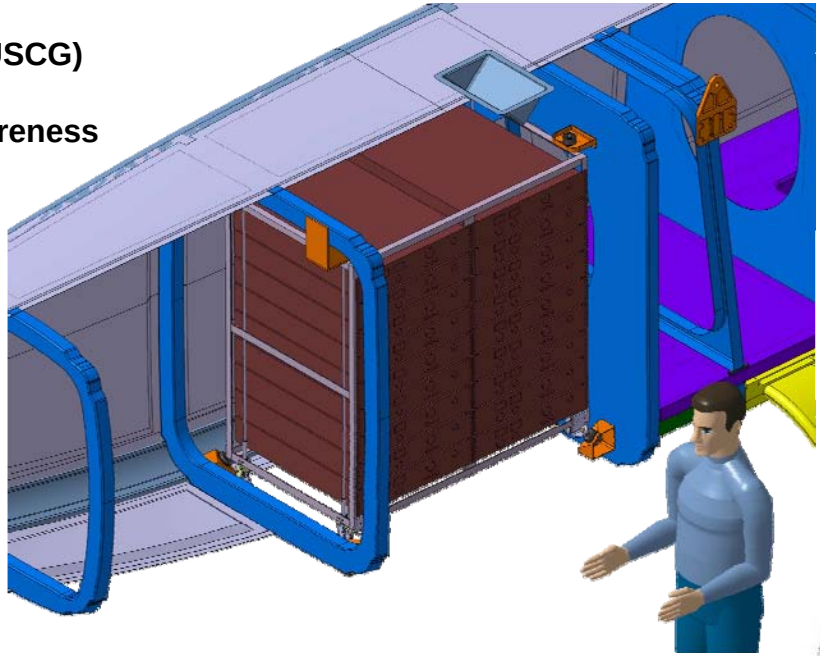
Modular Payload Bay

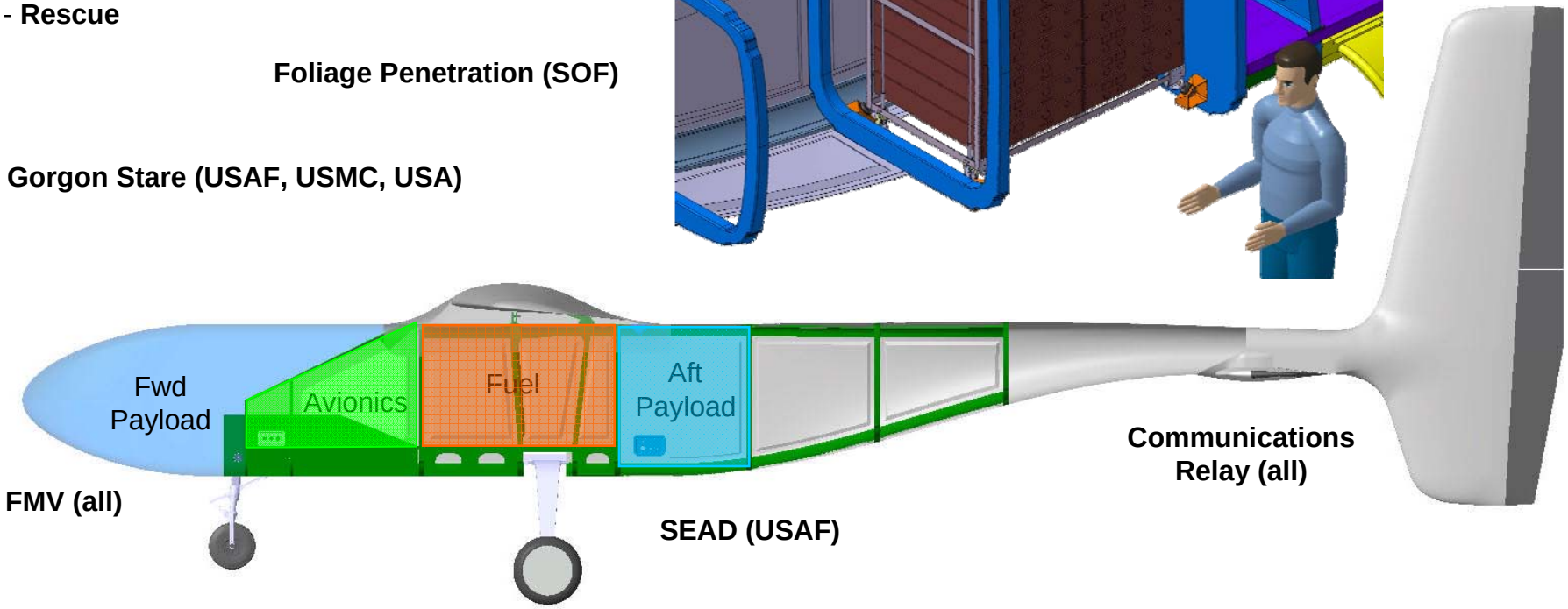
Maritime Radar (USN, USCG)
- **ASW**
- **Maritime Domain Awareness**

SAR/GMTI (USCG, USN)
- **Semi-submersible**
- **Border control**
- **Coastal patrol**
- **Rescue**

Foliage Penetration (SOF)

Gorgon Stare (USAF, USMC, USA)





FMV (all)

SEAD (USAF)

Communications Relay (all)

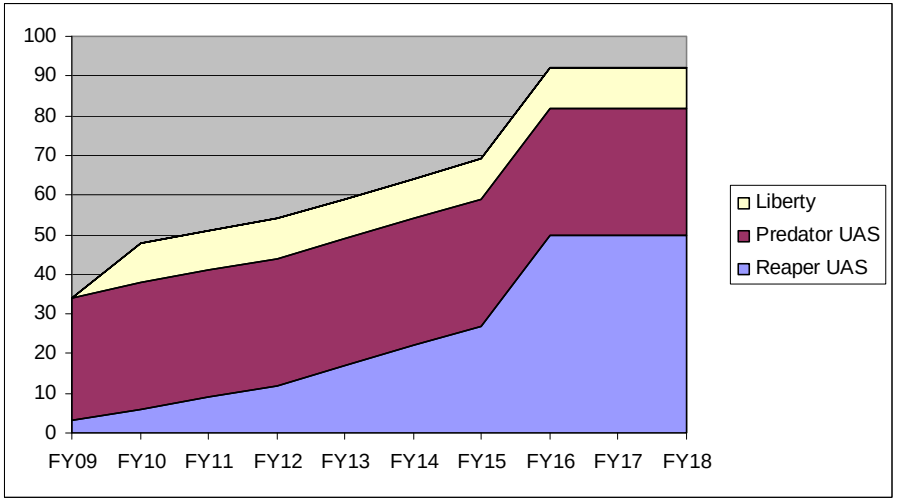
Enables Service-unique payloads

Orion JCTD
Addressing USAF Irregular Warfare Capabilities

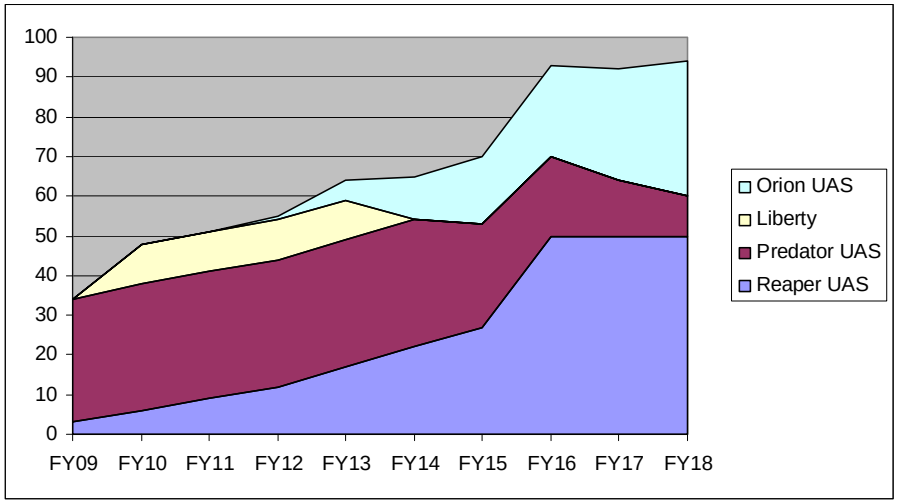
The Value of Air Force Capabilities in IW

- Less Intrusiveness
- Rapid Response
- Improved Strategic, Operational, and Tactical Situational Awareness
- Space Assets: ISR, Precision Nav, Comm, & Weather

Orion Improves CAP Generation



CAPs without Orion

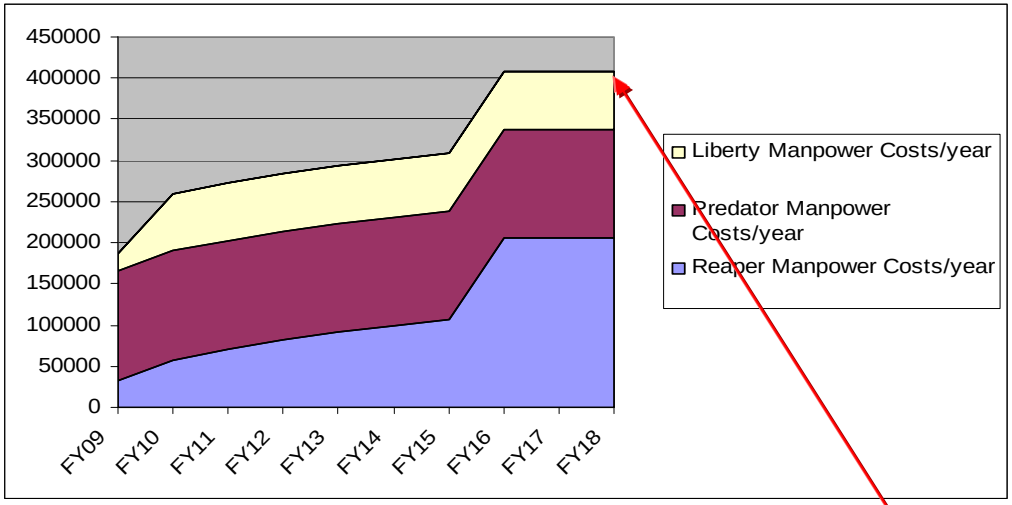


CAPs with Orion

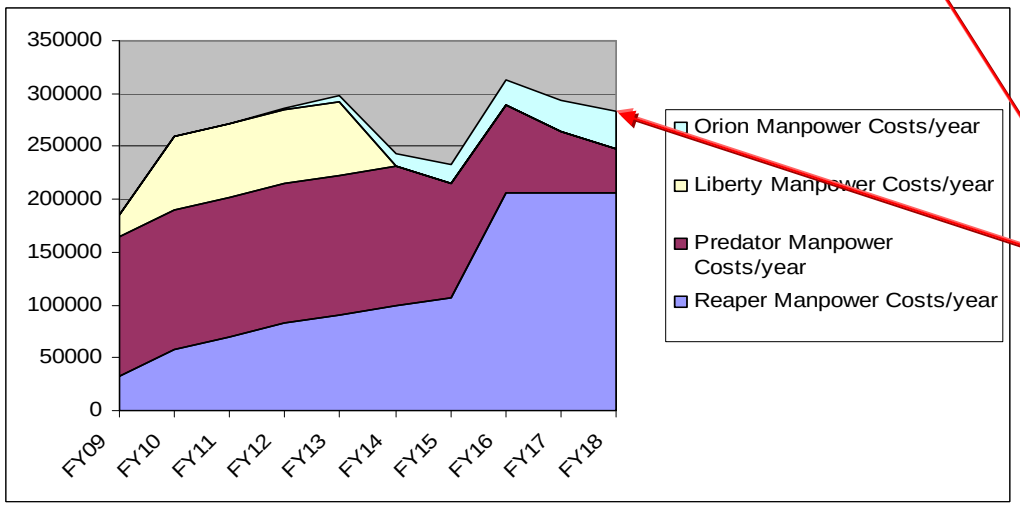
- Orion replaces all Liberty and eventually some of Predator CAPs
- Funding is steady across the FYDP for procurement
- FY10 budget is approved
- No attrition of platforms

Orion increases CAPs dramatically through FY18

Orion adds Capability, Reduces O&M



$M/year without Orion



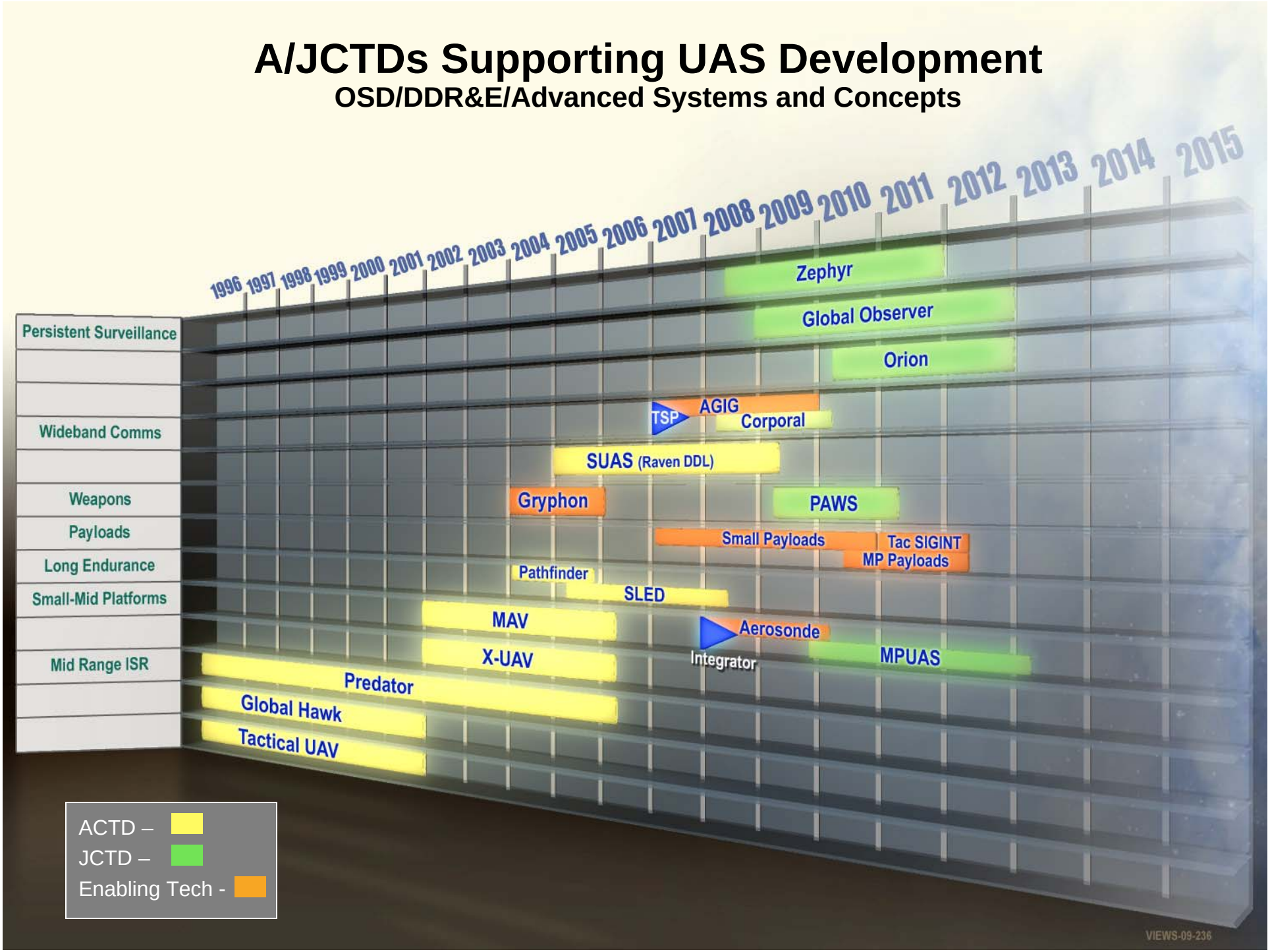
$M/year with Orion

- Orion at LRIP numbers
- Orion replaces all Liberty and eventually some of Predator CAPs
- Funding is steady across the FYDP for procurement
- FY10 budget is approved
- No attrition of platforms

Orion continues adding CAPs while reducing Manpower costs by $100M thru FY18!

A/JCTDs Supporting UAS Development

OSD/DDR&E/Advanced Systems and Concepts



Summary

- ***Orion UAS* leverages 21st century technologies to satisfy CENTCOM persistent ISR requirements**
  - 120 hour endurance aircraft with 500-1,000 lb at 15,000-20,000 ft
  - Open architecture enables flexible payloads, future upgrades
- **Several COCOMs interested:**
  - EUCOM
  - AFRICOM
  - SOUTHCOM
  - SOCOM
- **Congressional interest in affordable, Persistent-ISR**

Orion supports OSD and COCOMs with open architecture design, long endurance and competitive prototyping